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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,016	04/20/2001	Yukihiro Kiuchi	NE+99P237A	9360

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EXAMINER

SELLERS, ROBERT E

ART UNIT	PAPER NUMBER
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1712

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DATE MAILED: 01/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/830,016

Applicant(s)

KIUCHI ET AL.

Examiner

Robert Sellers

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over European Patent No. 915,118 or Shimizu et al. or Japanese Patent Nos. 8-253555 or 10-182941 or 9-208808.

The European patent (pages 9-10, Table 1, Examples 1-4) shows a semiconductor encapsulant comprising Epoxy resin 1 (page 6, formula (2)) corresponding to the aralkyl biphenyl epoxy resin of formula (2) depicted on page 25 of the specification, Phenolic resin 1 (page 5, formula (1)) corresponding to the aralkyl biphenyl phenolic resin of formula (10) on page 28, and silica as the inorganic filler.

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Shimizu et al. (col. 8, Table 1, Examples 1-5 and 8-10) shows a semiconductor encapsulant containing Epoxy resin II (col. 6, lines 61-62) corresponding to tetramethylbiphenyl epoxy resin of the second structure of formula (4) on page 26, Hardener II (col. 6, line 66 to col. 7, line 9) corresponding to the aralkylphenol resin of formula (9) on page 27, along with silica (col. 7, lines 14-16) and alumina (deemed to be suitable on page 20, lines 7-8 of the specification) as inorganic fillers.

Japanese '555 (page 8, Table 2) shows a semiconductor encapsulant prepared from a mixture of biphenyl and tetramethylbiphenyl epoxy resins corresponding to formula (4), an aralkylphenol resin corresponding to formula (9), and a filler.

Japanese '941 shows a semiconductor encapsulant derived from a biphenyl epoxy resin corresponding to the first structure of formula (4) (page 3, formula (1)), an aralkylphenol resin corresponding to formula (9) (page 4), and a filler including alumina.

Japanese '808 shows a semiconductor encapsulant comprising a bisphenol novolac epoxy resin (page 2, paragraph 9), a phenolic resin and an inorganic filler.

The European patent (page 2, lines 27-28), Shimizu et al. (col. 1, lines 28-56) or the Japanese patents espouse compositions possessing flame retardance without the use of halogenated, phosphorus, metal oxide or antimony compounds.

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The claimed formation of a "foamed layer during thermal decomposition or at ignition to exert flame retardancy" in independent claims 1, 7 and 10 is a potential feature exhibited once the composition is cured. The flexural modulus at $240 \pm 20^{\circ}\text{C}$ E as a function of the weight percentage of inorganic filler W in independent claim 1 and the weight ratio of carbon monoxide:carbon dioxide q_1 , the weight ratio of thermally decomposed residue:cured article q_2 , and the weight ratio of components in the cured article:cured article q_3 in independent claim 4 is not recited.

Based on the equivalent types of epoxy resin, phenolic resin and inorganic fillers in formulations having flame retardance without the presence of conventional flame retardants, the prior art blends inherently possess the claimed limitations. The burden of proof shifts to applicants to determine whether or not the references feature such a capacity (*In re Fitzgerald*, 205 USPQ 594, CCPA 1980 and MPEP §§ 2112-2112.02).

Claims 1-13 are rejected under 35 U.S.C. 102(a) or (b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tokunaga et al. or Takami et al. or Enami et al. or Japanese Patent No. 8-301984.

Tokunga et al. (cols. 9-10, Table 3, Example 15) shows a semiconductor encapsulant comprising Epoxy resin II (col. 7, lines 61-62) corresponding to the mixture of biphenyl and tetramethylbiphenyl epoxy resins of formula (4), Hardener I which is a phenol novolak resin conforming to formula (11), and silica inorganic fillers.

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Takami et al. (cols. 14-15, Tables 1-4) shows a semiconductor encapsulant containing Epoxy resin I-A (col. 13, lines 15-16) corresponding to the biphenyl epoxy resin of the first structure of formula (4), Curing agent I-A (col. 13, lines 22-23) corresponding to the phenol aralkyl resin of formula (9), and a silica inorganic filler.

Enami et al. (col. 5, Example 1) shows a semiconductor encapsulant prepared from a cresol-novolac epoxy resin corresponding to formula (5), a phenol novolac resin corresponding to formula (11), and a fused silica inorganic filler.

Japanese '984 shows a semiconductor encapsulant derived from a dicyclopentadiene epoxy resin (page 2, formula (I) wherein X is formula (II)) corresponding to formula (6), an aralkylphenol resin (page 6) corresponding to formula (9) and a filler.

The exemplified semiconductor encapsulants do not contain any flame retardants. Japanese '984 acknowledges flame retardance without the requirement for a flame retardant.

The claimed formation of a "foamed layer during thermal decomposition or at ignition to exert flame retardancy" in independent claims 1, 7 and 10 is a potential feature exhibited once the composition is cured. The flexural modulus at $240 \pm 20^\circ\text{C}$ E as a function of the weight percentage of inorganic filler W in independent claim 1 and the weight ratio of carbon monoxide:carbon dioxide q_1 , the weight ratio of thermally decomposed residue:cured article q_2 , and the weight ratio of components in the cured article:cured article q_3 in independent claim 4 is not recited.

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Based on the equivalent types of epoxy resin, phenolic resin and inorganic fillers employed in the identical utility of a semiconductor encapsulant, the prior art blends inherently possess the claimed limitations. The burden of proof shifts to applicants to determine whether or not the references feature such a capacity (*In re Fitzgerald*, 205 USPQ 594, CCPA 1980 and MPEP §§ 2112-2112.02).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shiobara et al. Patent No. 5,312,878 (cols. 12-14) shows semiconductor encapsulants with various combinations of biphenyl (Epoxy resin (4)) and cresol-novolac (Epoxy resin (5)) epoxy resins, a dicyclopentadiene phenol resin (Phenol resin (1)) corresponding to formula (12), a brominated novolac epoxy resin and spherical silica and antimony trioxide inorganic fillers (col. 11, line 1).

⑥

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RS
1/17/03